BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Petition of STARSYS, Inc. for	)	RM-
Amendment of Section 2.106 of the	)	
Commission's Rules to Allocate	)	
Spectrum For, and to Establish	)	
Other Rules and Policies Pertaining	)	
to, a Low Earth Orbit Mobile	)	
Satellite Service	)	

ERRATUM

On May 4, 1990, STARSYS, Inc. ("STARSYS") petitioned the Commission to initiate a rulemaking proceeding to allocate spectrum for a spread spectrum low earth orbit mobile satellite service. STARSYS has now discovered that certain minor inaccuracies were made in portions of the description of its proposed "STARNET" user segment, and in the specification of the amount of spectrum STARSYS would use if it were required to operate its STARNET system on a non-spread spectrum basis.

All of these inaccuracies are minor in nature, and all occurred on page four of the petition for rulemaking. A substitute page four is attached hereto, inserted for

convenience purposes in a copy of the full text of the petition (with the exception of the Attachment).

Respectfully submitted,

STARSYS, INC.

By: _____
Raul R. Rodriguez
Stephen D. Baruch

Leventhal, Senter & Lerman
2000 K Street, N.W.
Suite 600
Washington, D.C. 20006-1809
(202) 429-8970

May 7, 1990

Its Attorneys

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Petition of STARSYS, Inc. for Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum For, and to Establish Other Rules and Policies Pertaining to, a Low Earth Orbit Mobile Satellite Service	)	RM-

PETITION FOR RULE MAKING

STARSYS, Inc. ("STARSYS"), by its attorneys and pursuant to Section 1.401 of the Commission's rules, hereby petitions the Commission to amend Section 2.106 of its rules, 47 C.F.R. § 2.106, to allow STARSYS to implement a new spread spectrum low earth orbit ("LEO") mobile satellite services ("MSS") communications service that will be capable of providing universal, two-way communications and position determination services.

Affiliates of STARSYS, including North American CLS, Inc. ("NACLS") which operates the Argos LEO system, have provided the scientific community with cutting-edge LEO MSS services for over 11 years. With recent advances in technology and a consumer and business population that is starved for low-cost, reliable mobile communications capabilities, STARSYS is convinced that the time has arrived for the implementation of a commercial LEO MSS system. To this end, STARSYS is, concurrently with this petition for rule making, applying to

the Commission for authority to construct a multi-space segment component spread spectrum LEO MSS system. (A copy of the STARSYS application is attached hereto as Appendix A.)

As explained in the STARSYS application and in this petition, Commission adoption of the STARSYS petition will advance the public interest in a variety of ways. In order that STARSYS may proceed promptly towards the realization of these benefits, it hereby requests expeditious consideration of the instant petition and the attached application. Further, STARSYS claims a "pioneer's preference" of the variety currently under consideration in proposed Section 1.402 of the Commission's rules.[1/]

I. STARSYS Service Description

As is fully explained in the attached application, STARSYS proposes to construct, and eventually to launch and operate, a revolutionary spread spectrum system consisting of 24 spacecraft placed in an inclined, low earth, non-geostationary orbit approximately 1,300 kilometers above the earth. The name of this system is "STARNET." The STARNET

1/ See Establishment of Procedures to Provide a Preference to Applicants Proposing an Allocation for New Services, FCC 90-141, slip op. at 4-5 (released April 27, 1990). STARSYS intends to file comments in response to the Commission's "pioneer's preference" rulemaking proceeding advocating the retroactive application of the pioneer's preference to rulemaking petitions filed after the release date of the notice of proposed rule making.

component spacecraft will weigh approximately 112 kg (246 lbs.) each, and have a minimum useful life of five years.

The STARNET system will be capable of providing 24-hour, 2-way communications and position determination services on a global basis. These services will be provided via ultra-low-cost, portable transceivers that will retail for less than $75 per unit. Primary and back-up control centers in the United States will interconnect with the global telecommunications network via standard interfaces, including X.25.

NACLS, an affiliate of STARSYS, has more experience than any other American organization in the design and construction of LEO mobile satellite payloads. Since 1979, NACLS has constructed 14 (and operated 7) low earth orbit mobile satellite payloads. These spacecraft have operated with a reliability factor that exceeds 99 percent. STARSYS intends to apply NACLS's technical experience, and improve upon it, to ensure that the highest quality LEO satellite technology is made available to the United States and the world.

The STARNET system requires the use of the spread spectrum technique, making it the most spectrum-efficient satellite system ever proposed to the FCC.[2/] The frequencies

---

2/ The specific frequencies requested are:

- Shared use with competing LEO MSS systems of 1 MHz at 137-138 MHz and 1 MHz at 148-149 MHz;

(Footnote continued on next page)

requested for reallocation in this petition are currently allocated (both domestically and internationally) for satellite services. However, the specific LEO MSS service proposed by STARSYS is not presently authorized for this band.

The STARNET user segment will consist of millions of ultra-low-cost terminals operating at VHF frequencies. These terminals will transmit to the STARNET system components at 4,800 bps over ten 18 KHz channels at 1-watt for portable and 1-watt for mobile terminals. Subscribers will be able to send messages of up to 100 alphanumeric characters. These same terminals will be able to receive messages from the STARNET system components at 9,600 bps over four 30 KHz channels. The unprecedented low power required for communication via the STARNET system will enable STARSYS to arrange for the mass production of user terminals -- terminals that include two-way communications in positioning, one megabyte of RAM standard, power-saver circuitry for long life, and VLSI logic circuitry -- for less than $75 per unit. This makes the STARNET user terminals available to the public at

---

(Footnote continued from previous page)

2/ or, if STARNET is required to operate on a non-spread spectrum basis:

- 509 KHz in the 137-138 MHz band for space-to-earth transmissions;
- 411 KHz in the 148-149 MHz band for earth-to-space links.

1/15th of the price of the current lowest cost satellite access equipment.[3/]

The services to be offered on the STARNET system include the following:

- Two-way messaging from $75 calculator-sized terminals;
- Interconnection with the public-switched telephone network;
- Position determination anywhere in the world;
- Emergency alert services, for safety of life or property;
- Environmental monitoring services, to detect and reduce pollution;
- Mobile property and construction equipment management services, for anti-theft purposes;
- Automatic vehicle pollutant emission level monitoring;
- Electronic license plate functions for intelligent vehicle-highway systems;
- Biosensor monitoring for telemedicine applications;
- Home remote control; and
- Judicial system locating service.

STARSYS projects that approximately 10 percent of the U.S. population, some 25 million people, will subscribe to one or

---

3/ The current low-cost leader in satellite services is NACLS's affiliate -- CLS Argos -- with terminal equipment costing approximately $1,000 per unit.

more of the above-listed pioneering mobile satellite services. STARSYS has tailored its service offerings to meet the needs of the public in the 1990s and beyond, and proposes to offer its capabilities on a private, non-common carrier basis to organizations with regular business operations in various market segments (e.g., automotive, health care, recreational equipment, mobile communications, and environmental protection industries).

Capacity on the STARNET system will be sold to organizations in Million Transmission ("MT") units. The end-user sales organizations will then be free to market the STARNET capacity to final customers in whichever manner they believe to be best. STARNET's market research indicates a total demand for its services of approximately 100 MT units per year, with 40 percent of the demand coming from the automotive industry, 20 percent from health care, 15 percent each from recreational equipment and mobile communications, and 10 percent from environmental protection industries.

II. The Allocation Of Spectrum For The Establishment Of An LEO MSS System Will Advance The Public Interest.

There is no doubt that the STARNET system will serve the public interest in a variety of different and important ways. The STARNET system will save lives, protect property, help safeguard the environment, and provide a supplemental solution to the problem of prison overcrowding. The STARNET system will also improve the efficiency of a number of sectors

of the business economy, particularly the transportation sector, thereby enhancing American effectiveness and competitiveness in the global economy. STARSYS will also serve the national interest in developing a free and open global market in telecommunications services, furthering in the process the Commission's longstanding objective of multiple entry into new satellite technologies.

The LEO MSS service, as provided by STARSYS affiliate NACLS, has already demonstrated its ability to serve the public interest by saving lives, safeguarding property, and helping with environmental monitoring and protection efforts. The STARNET system proposed in the attached application, through its pioneering application of spread spectrum communications technology to the LEO MSS service, will enable these service benefits, and numerous others -- both as contemplated by STARSYS and as yet unimagined -- to be made available to millions of users.

Not only is STARSYS's spread spectrum technology considerably more spectrum-efficient than any other technology that has been proposed to date for LEO MSS, it is entirely consistent with the Commission's longstanding objective of achieving competitive multiple entry for emerging satellite

technologies.[4/] In the past, when the Commission has been faced with a decision between allocating spectrum for a service that will employ spread spectrum technology and allocating spectrum for a less efficient proposal that would reduce the capacity available for competing systems, the Commission has found that the utilization of spread spectrum technology that fosters competitive multiple entry is most consistent with the public interest. See RDSS Order, supra, 104 F.C.C.2d at 660-663. In fact, the primary motivation behind the Commission's decision to authorize spread spectrum proposals was the inherent opportunity for establishment of competitive multiple entry. Id. at 661.[5/] STARSYS urges the Commission to conclude here, as it did in the RDSS Order, that the benefits of spread spectrum technology require their application to LEO MSS service proposals.

As explained in the attached STARSYS application, STARSYS is proposing that the LEO MSS service be provided on a "Modified Primary" basis. This means that STARNET users would

---

4/ See, e.g., Domestic Communications Satellite Facilities, 22 F.C.C.2d 86 (1970); 35 F.C.C.2d 844, recon. in part, 38 F.C.C.2d 665 (1972). See also Establishment of Satellite Systems Providing International Communications, 101 F.C.C.2d 1046 (1985); Amendment to the Commission's Rules to Allocate Spectrum For, and to Establish Other Rules and Policies Pertaining to, a Radiodetermination Satellite Service, 104 F.C.C.2d 650 (1986) ("RDSS Order").

5/ In the RDSS Order, the Commission did provide applicants proposing uses of technology that were less efficient than spread spectrum uses an opportunity to amend their system proposals to incorporate spread spectrum design. RDSS Order, supra, 104 F.C.C.2d at 662.

be protected against subsequent LEO MSS system users in the requested frequency bands, but that STARSYS would be unable to complain of any interference from existing users in these same frequency bands.[6/] The frequency bands STARSYS proposes to use represent currently underutilized portions of the VHF and UHF frequency bands that are particularly well suited to the LEO MSS use proposed by STARSYS. They will enable the achievement of maximum capacity while minimizing the amount of power needed to communicate with the STARNET system component spacecraft.[7/]

Finally, STARSYS requests the Commission to utilize the parallel rulemaking and licensing proceeding approach in connection with LEO MSS services, in order to expedite the introduction of this new technology and service to the public, and to ensure that any rules and policies adopted by the Commission reflect concrete proposals for these innovative systems. See RDSS Order, supra, 104 F.C.C.2d at 252. See also National Association of Broadcasters v. FCC, 740 F.2d 1190 (D.C. Cir. 1984) (direct broadcast applications considered concurrently with rule making proceeding). The public interest

---

6/ A detailed interference analysis is included in the attached STARSYS system application. In a nutshell, this analysis demonstrates that the STARSYS system will be compatible with existing users in the proposed frequency bands, and will not cause harmful interference.

7/ The low radiated power of the STARNET user terminal transmitter (approximately 1 watt), combined with the short-pulse nature of the signals and the spread spectrum modulation, will permit STARSYS to avoid interference with existing Fixed and Mobile Services.

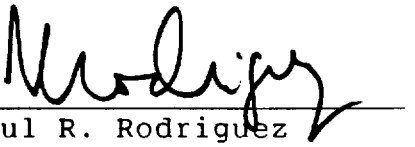
will be greatly served by the simultaneous consideration of the pioneering STARNET system application (which relies on relatively low cost, light weight spacecraft that will serve an unprecedented number of concurrent users) and the instant petition for the initiation of a rulemaking proceeding to allocate spectrum and establish rules to govern the new LEO MSS service.

CONCLUSION

The STARNET system, operating at the frequencies requested herein, represents a novel and efficient use of spectrum. The utilization of an LEO MSS system to provide two-way communications and position determining capability on a global basis, at extremely low cost, will further important public and national interests. Accordingly, STARSYS requests the Commission to issue a notice of proposed rule making to adopt the frequency allocations requested herein, and to accept for filing and process the attached STARSYS system application that is being filed separately on this date.

Respectfully submitted,

STARSYS, INC.

By: 

Raul R. Rodriguez
Stephen D. Baruch

Leventhal, Senter & Lerman
2000 K Street, N.W.
Suite 600
Washington, D.C. 20006-1809
(202) 429-8970

May 4, 1990

Its Attorneys

ATTACHMENT